

Accounting Mechanism for Article 8 of the 2017 Linkage Agreement

This document presents the accounting mechanism developed by Québec and California that identifies and accounts for compliance instruments traded between jurisdictions and retired in the WCI linked carbon market. The accounting mechanism has been developed pursuant to Article 8 of the [Agreement on the Harmonization and Integration of Cap-and-Trade Programs for Reducing Greenhouse Gas Emissions](#). The partner jurisdictions will provide more information in the coming months regarding next steps in implementing the principles outlined in Article 8 of the Agreement.

Background

The California Cap-and-Trade Program and Québec Cap-and-Trade System have been linked since January 2014. Linking enables compliance instruments to be traded and used interchangeably across the linked programs.

This document introduces an accounting mechanism developed pursuant to Article 8 of the [Agreement on the Harmonization and Integration of Cap-and-Trade Programs for Reducing Greenhouse Gas Emissions](#) (Agreement) that identifies and accounts for compliance instruments¹ traded between jurisdictions and retired in the WCI linked carbon market. Based on this accounting, Québec and California will determine the annual number of compliance instruments retired toward cap-and-trade program compliance that are attributed to each jurisdiction.

Article 8 of the Agreement states that:

In order to ensure clarity and transparency in how greenhouse gas reductions from cap-and-trade programs are counted toward each Party's emission reduction target, the Parties agree to develop and implement an accounting mechanism that provides a transparent and data-driven calculation that attributes to each Party its portion of the total greenhouse gas emission reduction achieved jointly by the Parties' linked cap-and-trade programs.

The agreed upon accounting mechanism should achieve a high level of transparency and careful and secure management of confidential and market-sensitive information in the Parties' cap-and-trade programs. The Parties will build

¹ Compliance instruments include all types and subtypes of allowances (or emission units) and offset credits issued by the partner jurisdictions.

on international principles and criteria, namely those pertaining to environmental integrity and robust accounting, with an emphasis on transparency and on avoiding double counting.

The Parties recognize that to avoid double claiming of emission reductions, only the Party to which an emission reduction is attributed by the accounting mechanism can use that reduction when assessing its progress toward meeting its emission reduction target, and other Parties will appropriately recognize a corresponding opposite emission impact when assessing their progress toward meeting their respective emission reduction targets.

The Parties acknowledge that when developing and implementing the accounting mechanism, each Party's applicable statutory and regulatory requirements will be respected.

The Parties agree to periodic review of the accounting mechanism in response to the development of laws applicable to each Party or relevant national and international principles and criteria.

The mechanism detailed below will be applied by the current partners of the linked WCI carbon market, Québec and California, and is presented here in the context of a two-way partnership. However, the accounting mechanism is flexible enough to allow for multiple partners.

Accounting for surrendered compliance instruments

All compliance instruments in the WCI market exist only in virtual form within the Compliance Instrument Tracking System Service (CITSS). They are created and distributed (or put in circulation) by each partner jurisdiction in the market. Each Québec and California compliance instrument is equal to one metric ton of CO₂ equivalent.² Registered entities in the market can hold compliance instruments and trade them with other registered entities. Covered entities must surrender compliance instruments to their respective governments for program compliance. Registered entities may also decide to voluntarily surrender compliance instruments for other purposes as specified in the respective California and Québec regulations.³

² CO₂ equivalent is a metric used to compare the emissions from various [greenhouse gases](#) on the basis of their [global-warming potential \(GWP\)](#) by converting amounts of other gases to the amount of carbon dioxide with the same GWP.

³ The term "surrender" means the retirement of compliance instruments to meet a compliance obligation or for voluntary purposes.

Each compliance instrument is assigned a unique serial number upon creation in CITSS that ensures traceability. A compliance instrument serial number precisely identifies its type and originating jurisdiction. For market oversight and security reasons, these serial numbers cannot be accessed by registered entities, as they are reserved for the exclusive use of partner governments and certain service providers, such as the external market monitor.

As will be described in further detail below, the accounting mechanism designed by Québec and California is based on the net flow of compliance instruments traded between the partner jurisdictions' registered entities only once the compliance instruments have been surrendered (i.e., retired) to a jurisdiction, rather than being based on entities' holdings of such instruments. This approach seeks to avoid bias related to the unpredictable and dynamic movement of compliance instruments between jurisdictions and concentrates on the final use of these instruments.

Inter-jurisdictional compliance instrument net trade flows

For each jurisdiction, the inter-jurisdictional compliance instrument net trade flow is calculated as follows:

- The total number of domestic compliance instruments retired by another jurisdiction; minus
- The total number of compliance instruments issued by another jurisdiction that were retired domestically.

As a result, if jurisdiction A retires more compliance instruments issued by jurisdiction B than jurisdiction B retires from jurisdiction A, then jurisdiction A will have a negative net flow of compliance instruments. This, in turn, means that jurisdiction A has acquired instruments from B on a net basis, which means it is a net acquirer of compliance instruments – and vice versa.

Method for determining the origins of retired compliance instruments

For the purpose of the accounting mechanism, allowances (including Québec-only early retirement credits) and offset credits are treated differently when determining their origin upon retirement.

Allowances

To ensure fully fungible allowances in the WCI market, the partner jurisdictions agreed from the start that registered entities should be unable to differentiate between the origins of the allowances in their possession. As such, when transferring allowances within CITSS, entities are unable to select which allowances to transfer or to surrender

based on origin. Instead, the allowances to transfer are selected by an algorithm within CITSS.

When entities transfer allowances, the CITSS algorithm chooses which allowances to transfer among those available based on pre-established rules that prioritize computer processing efficiency. These rules do not impair the integrity of the system since every allowance has equal value. However, relying on allowance serial numbers to determine the origin of allowances for net flow calculations could create an inaccurate representation of the distribution of allowances in the market because the algorithm prioritizes efficiency rather than environmental accounting.

Moreover, basing allowance origins on serial numbers could expose the accounting results to sharp variations if the algorithm rules were ever changed. Therefore, to ensure that net flow results are transparent and free from the influence of the CITSS algorithm and that the way of determining them will be consistent over time, a net flow accounting method has been developed that does not rely on serial numbers to determine the origin of the allowances retired. This method is called the “proportional approach.”

The proportional approach, as the name indicates, consists of using the proportion of allowances available from each jurisdiction in the total WCI market supply (total market supply) when it is time to define the origin of allowances surrendered to a jurisdiction. For example, this means that if allowances from a jurisdiction represent 10% of the total market supply when allowances are surrendered, then 10% of retired allowances will be considered to have originated from that jurisdiction.

In all circumstances, the accounting mechanism for determining the origin of retired allowances is based on this proportional approach, which guides any decision-making in that regard. This proportional approach will be used going forward by jurisdictions, as each one is responsible for its own supply of allowances in the market and the resulting net flows with other jurisdictions.

Market supply

For purposes of the proportional approach, the total market supply is determined by the sum of all allowances that have been put in circulation and that are theoretically available for surrender to a jurisdiction at any given moment. Therefore, allowances are in circulation once they are transferred from a jurisdiction account to any of the following accounts held by a registered entity:

- General Account;
- Compliance Account; or
- Annual Allocation Holding Account.

The proportion of each jurisdiction's supply in the market is determined separately for each vintage. The total market supply of allowances is comprised of each jurisdiction's supply. A jurisdiction's supply is determined as the difference between the sum of allowances it has put in circulation and the number of these allowances subsequently withdrawn from the market. For a given vintage, a jurisdiction's supply proportion is calculated as the ratio of the jurisdiction's supply of that vintage relative to the total of allowances of that vintage available in the market.

The flow of allowances into and out of the market

Allowances are mainly added to the market supply when they are transferred from jurisdiction accounts to registered entities' accounts following:

- Auctions;
- Reserve sales; or
- Free allocation.

Allowances may also be withdrawn from the market. Some allowance withdrawals from the market are permanent, where the allowances are never to be reintroduced to the market, while others are temporary, where allowances will eventually be put into market circulation again. As these two types of withdrawals are different, permanent withdrawals are hereafter referred to as **retirements**, and temporary withdrawals are referred to as **supply removals**.

As previously mentioned, the accounting mechanism is based solely on compliance instruments surrendered to jurisdictions. Thus, **the proportional approach to define the origin of allowances surrendered is applied only to allowance retirements**, when allowances are retired for:

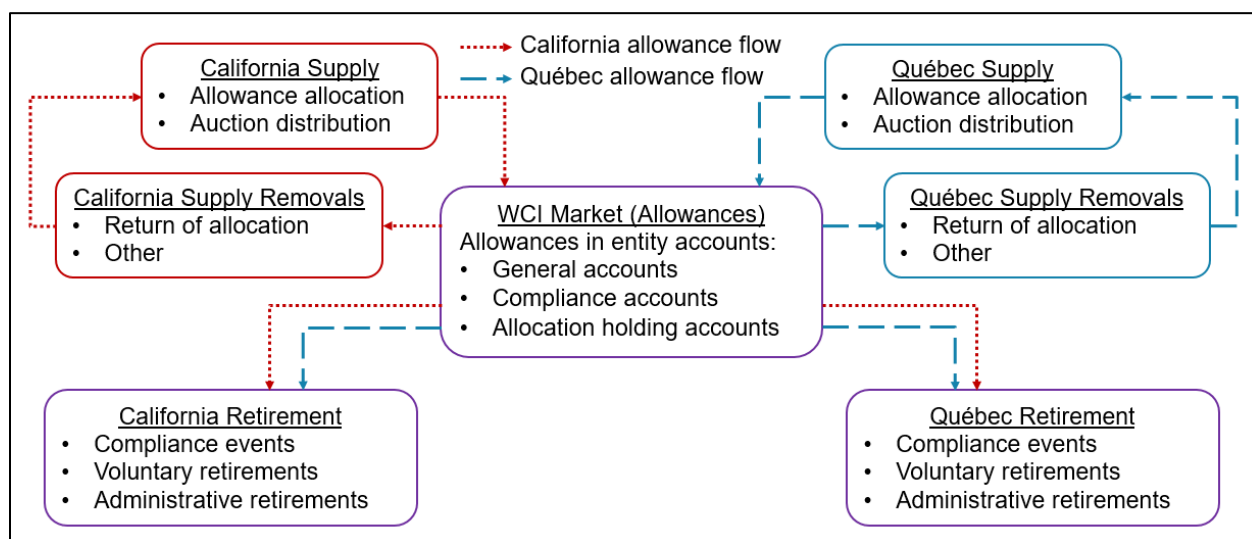
- Compliance obligations;
- Administrative purposes; and
- Voluntary purposes.

Supply removals are temporary withdrawals that will eventually be reintroduced back into the market, so **these transfers are considered to be an adjustment to a specific jurisdiction's market supply**. Thus, for supply removals, the proportional approach is not applied, and instead these transfers include only the jurisdiction's own allowances. These types of supply removal transfers include, but may not be limited to:

- Return of free allocation;
- Account closure in case of a bankruptcy;
- Meeting three-fourths of an untimely surrender obligation (4:1); and
- Other potential temporary supply removal transfers.

Supply removals do not result in any net flow between jurisdictions because the allowances are not yet retired. It is important to highlight that these jurisdictional supplies of allowances are cumulative and dynamic in nature, meaning that they continually ebb and flow as allowances are put into and removed out of circulation. Therefore, supply proportions must be calculated sequentially on each date of a retirement, starting with the first date of a retirement. Figure 1 illustrates different types of allowance flows that determine market supply.

Figure 1. Allowance flows into and out of the market that affect the WCI Market Supply.



Market supply proportions

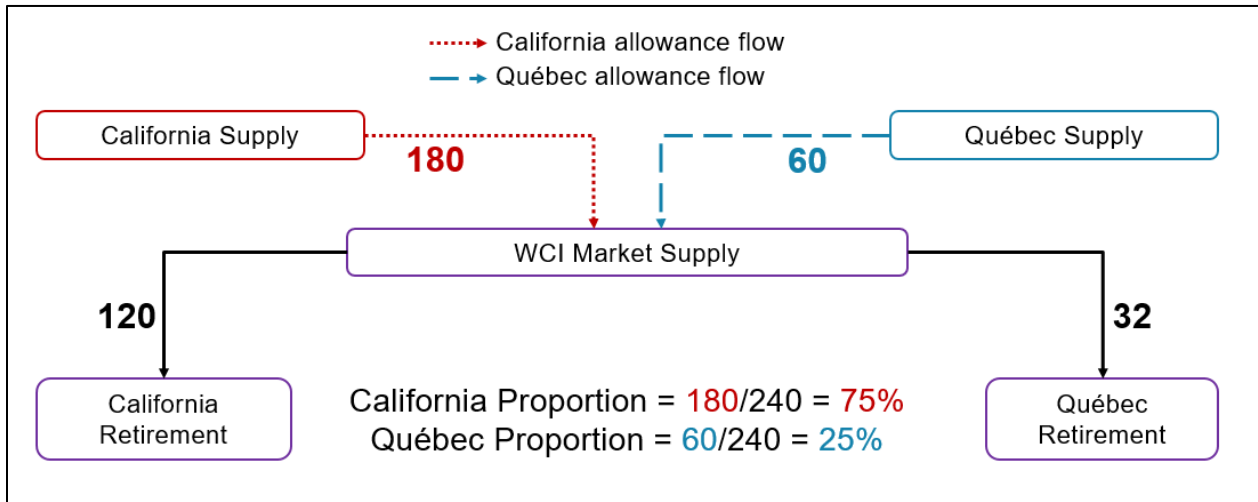
Each jurisdiction’s supply in the market is calculated separately for each vintage. A jurisdiction’s supply is determined as the difference between the sum of allowances it has put in circulation and the number of these allowances subsequently withdrawn from the market.

For a given vintage, a jurisdiction’s supply proportion is calculated as the ratio of:

- The jurisdiction’s supply of allowances of a given vintage relative to;
- The total market supply of allowances of that vintage.

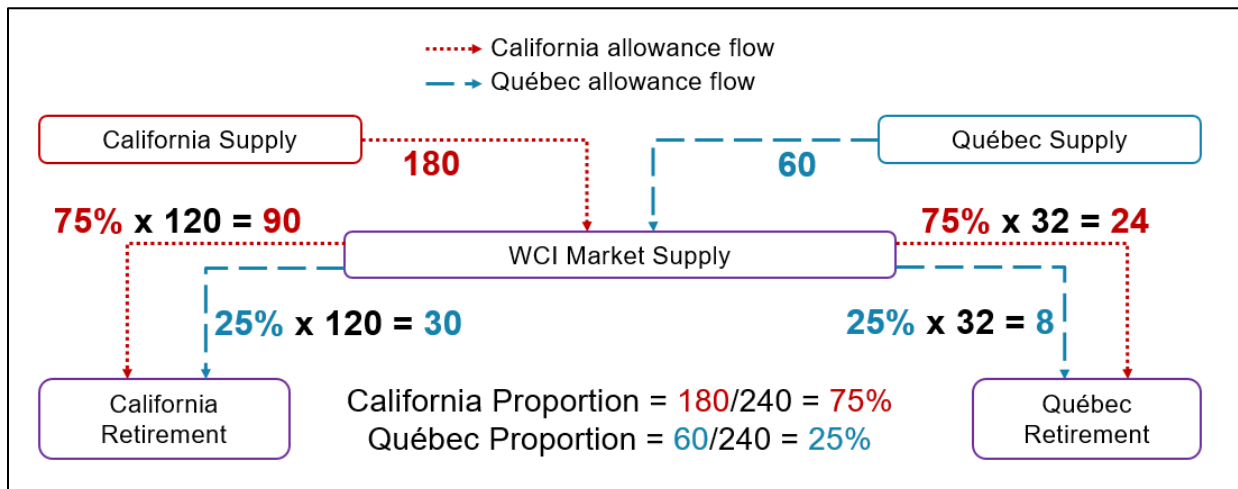
Figure 2 illustrates how supply proportions for each jurisdiction are determined. In this example, California has supplied 180 allowances to the market and Québec has supplied 60 allowances. Assuming there were no other allowances already in the market, these supply quantities give a supply proportion of 75% for California and 25% for Québec.

Figure 2. Determining the supply proportion in the WCI Market for each jurisdiction for a simplified hypothetical example.



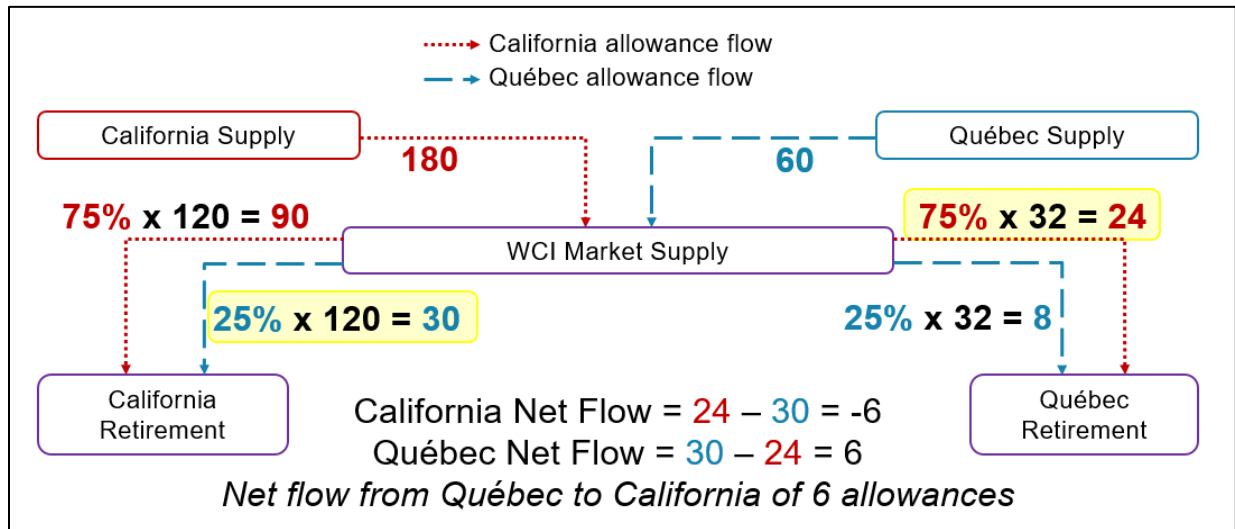
The supply proportions are then applied to the retirement amounts by each jurisdiction to define the origin of the retired allowances. In the Figure 2 example, after a total of 240 allowances were supplied to the WCI Market, 152 allowances were simultaneously retired from the market, 120 retired to California and 32 retired to Québec. Figure 3 follows on the example from Figure 2. In applying supply proportions to determine the origin of the retired allowances, Figure 3 shows that of the 120 allowances retired to California, 90 are California-issued and 30 are Québec-issued. Similarly, of the 32 allowances retired to Québec, 24 are California-issued and 8 are Québec-issued.

Figure 3. Determining the origin of retired allowances from each jurisdiction's supply proportion for a simplified hypothetical example.



Finally, Figure 4 follows through on this example by calculating the net flow of allowances associated with this retirement event. For California, the net trade flow is the total number of California allowances retired to Québec; minus the total number of allowances issued by Québec that were retired to California. Therefore, California's net trade flow is $24 - 30 = -6$. Similarly, Québec's net trade flow is $30 - 24 = 6$. That is, there is a net flow from Québec to California of 6 allowances.

Figure 4. Calculating the net trade flow of allowances for each jurisdiction for a simplified hypothetical example.



Transfers between administrative accounts

Allowance transfers that occur outside the market (i.e., where allowances are transferred between a jurisdiction's administrative accounts) do not impact the total market supply. Since these transfers do not affect the quantity of allowances in circulation, they are not considered in the accounting mechanism. These types of transfers include, but are not limited to:

- Voluntary Renewable Electricity Program retirements;
- Retirements from auction, issuance, and allocation accounts;
- Ontario adjustment retirements (see below);
- Reserve replenishment;
- EIM outstanding emissions retirements; and
- Environmental integrity retirements.

Accounting for Ontario's allowance supply

After Ontario withdrew from the WCI linked carbon market, Québec and California agreed to absorb the net positive supply of allowances left by Ontario by reducing an equivalent number of allowances from their future supplies.

This means that, to account for the impact Ontario had on WCI market supply, all the Ontario market supply and withdrawals are deemed to have originated from Québec and California. In attributing the origin of Ontario allowances, 86% of Ontario supply and withdrawals are deemed to originate from California and 14% are deemed to originate from Québec. These are the same proportions that Québec and California previously agreed to for retiring allowances from future supplies to absorb the net positive supply from Ontario and preserve the environmental integrity of the market.

The proportional approach was not yet developed at the time that Ontario delinked from the WCI market. The method for determining the origin of allowance retirements to preserve environmental integrity after Ontario's delinking (which led to 86% being deemed from California and 14% from Québec) will be used only for that specific instance. The accounting methodology described in this document, including the proportional approach, would be applied to determine the net trade flow of allowances resulting from any future retirements that might be made under circumstances similar to Ontario's delinking. The overall impact of this conversion—the approach to determining the origin of allowances retirements to account for Ontario's delinking—on annualized net flow is approximately 5% of total net flow for 2018 and less than 2% of total net flow in each other year.

Offset credits

Offset credits are government-issued compliance instruments for the completion of GHG emission reduction or removal projects that meet various requirements and that occur in sectors not covered by its cap-and-trade program or any partner jurisdiction's cap-and-trade program. Offset credits are issued only if the promoter of a project has followed all applicable requirements in a compliance offset protocol included in a jurisdiction's regulation.

Registered entities can identify the origin (i.e., the issuing jurisdiction) of an offset credit in CITSS by its project code. In addition, all offset credits originating from the same project are grouped together in an entity's CITSS account. This is in contrast to allowances, where an entity cannot determine the origin of an allowance to be transferred. When a registered entity transfers offset credits within CITSS, the entity can choose the specific project for the offset credit that will be transferred, and thus the issuing jurisdiction of the offset credit is known by the entity. The different selection processes within CITSS for transferring allowances versus offset credits is important to understand: the CITSS algorithm plays no part in selecting which offset credits to

transfer, while it does determine which allowances to transfer. **As such, the proportional approach does not need to be applied to retirements of offset credits. The accounting mechanism for net transfer flows of offset credits is based instead on the true origins of offset credits retired to a jurisdiction by covered entities or other participants.**

Annualizing trade accounting

The overwhelming majority of compliance instruments are retired by covered entities to jurisdictions for compliance purposes. Some of these instruments are retired on an annual basis (annual partial compliance obligations) in accordance with the California regulation, but most are retired at three-year intervals at the end of each compliance period. To enable jurisdictions to calculate annual inter-jurisdictional net trade flows that will be used in accounting for GHG emission reductions, retired compliance instruments must be attributed to a specific year.

The accounting mechanism distributes compliance instruments retired at the end of each compliance period according to the annual emissions to which they correspond. In this respect, the annual breakdown of retired instruments for a multi-year period will be proportionally derived from annual covered emissions. However, voluntarily retired compliance instruments are attributed to the actual year when they were retired.

This means that if an annual partial compliance obligation takes place, the proportion of allowances from each jurisdiction in the total market supply cannot be directly derived from the sum of compliance instruments retired at the end of a compliance period. As such, the breakdown of instruments retired by emissions year must take place in two stages.

First, the compliance instruments retired for an annual partial obligation must be applied to that year. Second, since compliance instruments are retired at the end of a compliance period for a mix of partial and complete annual obligations, the retired instruments must be applied to each year consistent with the covered emissions for each year. For example, California has a 30% annual retirement requirement after each of the first two years of a compliance period. Thus, compliance instruments surrendered at the end of the compliance period to cover the remaining compliance obligations need to be attributed appropriately, i.e., to cover 70% of annual obligations for each of the first two years and 100% of the annual obligation for the third year. Table 1 illustrates the relationship between compliance periods and emission years for California for the 2018-2020 compliance period.

Table 1. California annual and full compliance period compliance obligation requirements for emissions during 2018-2020.

Compliance Obligation	2018 Emissions Year	2019 Emissions Year	2020 Emissions Year
2018 Annual Compliance Obligation ⁴	30%	0	0
2019 Annual Compliance Obligation ⁵	0	30%	0
2018-2020 Full Compliance Period Obligation ⁶	70%	70%	100%

Once this attribution of retirements by emissions year is complete, the annual net flow of compliance instruments between jurisdictions can be determined for each year based on the origins of compliance instruments retired for emissions during that year.

Further reports

The partner jurisdictions have agreed to jointly produce a “Net Flow Calculation Report” after each full compliance period compliance event. The “Net Flow Calculation Report” will present annualized results of the net flows of compliance instruments calculated using the accounting methods described in this document.

The partner jurisdictions will provide more information in the coming months regarding next steps in implementing the principles outlined in Article 8 of the Agreement.

⁴ The 2018 Annual compliance obligation for 30% of 2018 emissions is surrendered in November of 2019.

⁵ The 2019 Annual compliance obligation for 30% of 2019 emissions is surrendered in November of 2020.

⁶ The 2018-2020 Full compliance period obligation for all remaining 2018-2020 emissions is surrendered in November of 2021.

Appendix – Example Accounting

The objective of the accounting mechanism described in this document is to calculate the annual net trade flow of compliance instruments between WCI partners. An example of the accounting method applied to public data for the first three compliance periods of the WCI market can be found at [Cap-and-Trade Meetings & Workshops](#).

The example uses publicly available market data to demonstrate how the net flow of allowances is calculated. The example is provided solely to demonstrate the method. The results should not be interpreted as official net flow between the jurisdictions. The example with public data does not reflect administrative transfers, voluntary retirements, or return of allocation, which are confidential and represent a small portion of total market supply and retirements. This example also does not incorporate adjustments related to Ontario's temporary linkage. The official net flow will be calculated using confidential transfer data from CITSS.

The data used in the example can be found in the following public reports:

- **Summary Results Reports and Auction Notices for each auction** – provide quantity of allowances supplied to the market via auction (Summary Results Reports) and the dates that allowances purchased at auction were transferred into entity CITSS accounts (Auction Notices)
 - [California Summary Results Reports and Auction Notices](#)
 - [Québec Summary Results Reports and Auction Notices](#)
- **Allowance Allocation Summary Reports for each vintage** – provide quantity of allowances supplied to the market via allowance allocation
 - [California Allowance Allocation Summary Reports](#) (under “Allocated Allowances”)
 - [Québec Allowance Allocation Summary Report](#)
- **Compliance Reports for each compliance period** – provide the quantity of allowances surrendered by vintage
 - [California Compliance Reports](#) (under “Compliance Reports”)
 - [Québec Compliance Reports](#) (under “Compliance”)
- [California’s Annual GHG Facility and Entity Emissions reports](#) – provide annual covered emissions data used to annualize net flows
- [Québec’s Verified and declared Emissions of the Establishments Covered by the Regulation Respecting a Cap-and-Trade System for Greenhouse Gas Emission Allowances Report](#) – provides annual covered emissions data used to annualize net flows